Results: 17 group A (100%), 1 group B (33%), 7 group C (100%) patients had an excellent result with complete clinical recovery and no recurrence. 24 of these 25 revealed complete cyst excision on postoperative MRI. All postoperative EMG in this group confirmed infraspinatus recovery. In two group B patients (66%), a residual cyst was noted on MRI, with persistent EMG findings in one. The mean ASES scores showed significant improvement (P<0.001)(A - 62 to 95 points, B - 58 to 76 points, C - 57 to 92 points). This was significantly better in groups A and C (P<0.05). No complications were encountered in any group.
Discussion: A translabral approach is adequate for focal spinoglenoid cyst excision, but is inadequate for extensile cysts. A paralabral approach to the spinoglenoid notch via a posterosuperior capsulotomy is necessary for extensile cysts. This allows better visualization of the cyst and facilitates thorough dissection and excision of the cyst walls. Moreover, the inferior branch of the suprascapular nerve is decompressed and traced under visualisation.
Conclusion: Both arthroscopic approaches are safe and effective, results in excellent clinical outcomes, and avoid cyst recurrence when applied for the specific type of cyst location.
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B0096

Novel anatomical single bundle ACL reconstruction using a rounded rectangle femoral dilator

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Background: During the past 10 years, the main trend for ACL reconstruction has shifted to anatomic reconstruction. There is no significant difference in the postoperative stability and clinical results between single and double bundle ACL reconstruction. So, an attention has returned to single bundle ACL reconstruction with grafts that are placed at the center of anatomical footprint. In the conventional circular femoral bone tunnel, creation of a large anatomical bone tunnel is not possible because of roof impingement. Several anatomical studies have reported that the femoral insertion of the ACL has a rounded rectangle shape, and we have also realized that the quadrupled semitendinosus tendons appear to be a rounded rectangle, rather than circular. Therefore, we created an original femoral dilator and developed a new ACL reconstruction technique: "Rounded rectangle femoral tunnel ACLR" (RFTR). This study aimed to compare the femoral tunnel size and clinical results between conventional anatomical single bundle ACL reconstruction (ASBR) and RFTR.
Material: Between May 2010 and January 2015, 120 primary ACL reconstructions were performed. After implementation of inclusion criteria, 97 ACL reconstructions were analyzed (ASBR = 57 patients, 21 male, 36 female; age, 24.1 ± 9.3 years; RFTR = 40 patients, 24 male, 16 female; age, 23.2 ± 8.3 years). The evaluation items were area of the femoral tunnel, anteroposterior laxity with KT-1000, pivot-shift test, and Lysholm score.
Results: RFTR created a bigger femoral tunnel area than did ASBR (average area, 51.9 ± 5.3 mm^2 vs 47.0 ± 7.3 mm^2; P<0.01). RFTR resulted in better anteroposterior stability and Lysholm score than did ASBR (average side-to-side difference for anterior tibial translation, 0.8 ± 1.1 mm vs 1.8 ± 1.2 mm; P<0.01); average Lysholm score, 98.9 ± 2.7 vs 97.6 ± 3.3; P=0.03). Differences in rotational stability between groups were not statistically significant (negative pivot shift, 90.0% vs 82.5%; P=0.39).
Conclusion: Compared with conventional anatomical single bundle ACL reconstruction, rounded rectangle femoral tunnel ACL reconstruction created a large femoral tunnel and improved anteroposterior laxity and clinical results.
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B0099

Clinical and radiological results of double level osteotomy for varus knee osteoarthritis. Review of our experiences

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Introduction: Osteotomies around the knee is generally indicated for patients with high activity level who have uni-compartmemtal knee osteoarthritis because total knee arthroplasty in this patient population may not be a good option. In addition, recent progresses in surgical procedure such as bi-plane osteotomy and use of rigid fixation device (LCP) and bone substitute materials (β-TCP) have facilitated early functional recovery and expanded the indication for osteotomy. In Japan, we frequently encounter osteoarthritic patients with severe varus knee deformity requiring surgical treatment. We have indicated and performed double level osteotomy (DLO) in such situation. The concept of DLO was to obtain anatomical knee joint-line by bi-plane cut closed wedge distal femur osteotomy (DFO) and bi-plane cut open wedge high tibial osteotomy (HTO) with the use of LCP and β-TCP. The purpose of the study was to examine clinical and radiological outcomes of this procedure in our practice.
Patients & Methods: Fourteen knees in 13 patients with severe varus knee deformity who underwent DLO and could be followed up for clinical and radiological assessments were included in the study. DLO was indicated for medial compartment osteoarthritic knees with severe varus malalignment. Surgical goal of DLO is to reconstruct the anatomical knee joint line while correcting the varus malalignment, Whole leg weight-bearing radiographs at the preoperative period and 6 months after surgery were available for 10 patients. Radiological parameters measured for analysis were as follows: mechanical tibiofemoral angle (mTFA), mechanical lateral distal femoral angle (mLDFA), medial proximal tibia angle (MPTA), and joint-line convergence angle (JLCA). In addition, pre- ad postoperative clinical outcomes were evaluated using the KOOS and the IKDC score.
Results: Each of the radiological parameters improved after surgery. The postoperative changes in measured values for mTFA, MPTA, mLDFA, and JLCA from the preoperative to the 6-month evaluation were -14.1° to 1.6°, 82.4° to 91.2°, 91.2° to 85.1° and 6.0° to 4.5° respectively. KOOS and IKDC scores also improved after surgery from 130 to 349 and 35 to 55, respectively.
Discussion: This study showed that DLO for patients with severe varus malalignment and medial compartment osteoarthritis could accomplish satisfactory clinical outcomes by normalizing coronal alignment while avoiding joint line obliquity.
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B0104

Comparison of three different methods for drilling PLB femoral tunnel in double bundle ACL reconstruction

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Purpose: The purpose of this study was to compare the PL femoral tunnel geometry between flexible and rigid drilling systems in TP technique and OI technique based on three-dimensional image analysis of postoperative CT images.
Method: Postoperative CT images at 1 week were available for analysis in 67 patients. Rigid drill, flexible drill and OI group was 20, 27 and 20 knees. Thereafter, three-dimensional CT image analysis using ZioTerm2009○R imaging software was applied to the PL femoral tunnels, and the following parameters were evaluated: position of the center of the tunnel aperture, tunnel length, shape of the intraarticular aperture (major axis length of the ellipse in relation to the original drilling diameter), and bending angle of the graft (angle formed by long axes of the intraarticular graft and femoral bone tunnel).
Results: Assessment of the tunnel center location based on the Bernard and Hertel method showed that anatomic tunnel placement was achieved. There are no significant difference in the tunnel length. The major axis of the aperture/drill diameter ratio averaged 1.29 in the flexible drill group, 1.24 in the rigid drill group and 1.13 in the OI group. The mean graft bending angle at the femoral tunnel aperture was 63.4° in the flexible drill group, 63.6° in the rigid drill group and 99.4° in the OI group.
Conclusions: The present study showed that anatomic placement of the femoral tunnel was feasible with both TP and OI techniques. The shape of the tunnel aperture was more ellipsoidal with both TP techniques, it was not more round aperture with the flexible drilling system. It was thought that the flexible drill guide was constraint by the preserved remnant. The graft bending angle at the tunnel aperture was sharp with OI drilling technique, which may increase the mechanical stress at the aperture.
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B0105

Influence of initial tension on the postoperative tibiofemoral relationship after anatomic anterior cruciate ligament reconstruction

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Background: The initial tension at graft fixation is one of the keys for successful outcomes after ACL reconstruction. Mae et al. previously reported good clinical outcomes after anatomic double-bundle (ADB) ACL reconstruction with a total initial tension of 20 N (Mae T, et al. Arthroscopy 2010). Recently, anatomic triple-bundle (ATB) procedure was developed in order to mimic the closer morphology of the native ACL and provided the better immediate postoperative stability than the ADB procedure with the same initial graft tension of 20 N (Mae T, et al. Arthroscopy 2013). Thus, we hypothesized that the ATB procedure might provide good postoperative outcomes with the smaller initial tension. The aim of this study was to prospectively compare the tibiofemoral relationship after the ATB ACL reconstruction with 10 N of initial tension to that with 20N.
Materials and Methods: The ATB ACL reconstruction using a hamstring tendon graft via 2 femoral and 3 tibial tunnels was performed in 27 patients with unilateral ACL injury. After graft passage, grafts were fixed with Endobutton-CLs on the femur. Then the patients were divided into 2 different pre-tensioning groups (a total graft tension of 10 N (13 knees) and 20 N (14 knees)), and the grafts were finally fixed at 20 degree of knee flexion with Double Spike Plates (Meira co, Nagoya, Japan) on the tibia. After knee immobilization for 2 weeks in both groups, range of motion exercise was started. Full weight bearing was allowed at 4 weeks, followed by a return to sports at 6 to 8 months. Computed tomography scans were obtained preoperatively, 3 weeks, and 6 months postoperatively. The patients lay in a prone position at 15° of knee flexion, in which the tibia caught an anterior load by the calf weight. The imaging data were constructed to 3-dimensional computer models. The anterior-posterior translation and the internal-external rotation of the tibia relative to the femur were measured. Then the side-to-side difference of tibial position was compared between the 2 groups. Likewise, the side-to-side difference at a maximal anterior load with KT-2000 Knee Arthrometer was calculated 6 months after surgery. Wilcoxon rank sum test was used for the statistical analysis with a significant value of $P < 0.05$.